

fu



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/737,223	12/16/2003	Jung-Kcun Park	SHIN1.002AUS	6343
20995	7590	03/09/2006	EXAMINER	
KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614			MOE, AUNG SOE	
			ART UNIT	PAPER NUMBER
			2685	

DATE MAILED: 03/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/737,223

Applicant(s)

PARK, JUNG-KEUN

Examiner

Aung S. Moe

Art Unit

2685

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>see attached</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1-6 are rejected under 35 U.S.C. 102(a) as being anticipated by Jung-Keun Park, et al. ("A Channel Estimation Technique for WCDMA Systems", IEICE TRANS. COMMUN., Vol. E86-B, No. 4, April 2003).

Regarding claims 1, Park et al discloses an apparatus for channel estimation by using a non-linear filter (i.e., noted the non-filter unit at the output side of the Fig. 1), comprising:

a multiplier for multiplying an input signal by a reference pilot signal (i.e., noted the multiplier as shown in Fig. 1 for receiving a pilot signal and Reference pilot on the input side of Fig. 1);

a filter for calculating the average value of pilot signals (i.e., noted the filter located between the multiplier and an interpolator on the input side as shown in Fig. 1);

an interpolator for computing a tentative estimation value of channel variation by using linear interpolation algorithms based on the average value of pilot signal (i.e., noted the interpolator as shown in Fig. 1; and page 1440);

a tentative channel estimation compensator for compensating a channel variable of the data signal delayed in a predetermined time based on the tentative estimation value of channel

variation (i.e., noted the multiplier located next to the interpolator as shown in Fig. 1; see page 1440);

a decision block unit for tentatively determining a sign of data signal based on the compensated data signals (i.e., noted the elements located next to the 2nd multiplier from the input side as shown in Fig. 1, page 1440);

a raw channel estimator for computing a raw channel estimation value based on the output signal of the decision block unit and the data signal delayed in a predetermined time (i.e., noted the 3rd multiplier located at the decision block unit as shown in Fig. 1 as shown in Fig. 1; see page 1440); and

a non-linear filter for computing a final channel estimation value of channel variation based on the tentative estimation value of channel variation and the raw channel estimation value (i.e., noted the filter element located between the 3rd and 4th multiplier as shown in Fig. 1; see 1440).

Regarding claim 2, Park et al discloses wherein the non-linear filter includes a plurality of taps for computing the final estimation value of channel variation by combining output signals from the taps, wherein the non-linear filter is formed by one tap for providing a weight to the tentative estimation value of channel variation and other taps for providing a weight to the raw channel estimation value (i.e., noted the plurality of taps as shown in Fig. 1 including a summing circuit for combining output signals and respective weight values are also provided to the plurality of multiplier provided within the non-linear filter as shown in Fig. 1 and page 1440; also see equation “9”).

Regarding claim 3, Park et al discloses wherein the weight is an inverse of the number of taps in the non-linear filter (i.e., see Fig. 1, page 1440 and Equation 9).

Regarding claim 4, Park et al discloses a method for making channel estimations using a non-linear filter (i.e., noted the non-filter unit at the output side of the Fig. 1), the method comprising the steps of:

a) calculating the average value of pilot signals (i.e., noted the filter located between the multiplier and an interpolator on the input side as shown in Fig. 1);

b) computing a tentative estimation value of channel variation by using a linear interpolation algorithms (i.e., noted the multiplier located next to the interpolator as shown in Fig. 1; also noted the interpolator as shown in Fig. 1; and page 1440);

c) compensating the channel variation of the data signal delayed in a predetermined time based on the tentative estimation value of channel variation (i.e., noted the 2nd multiplier located next to the interpolator as shown in Fig. 1; see page 1440);

d) tentatively determining a sign of data signal based on the compensated data signal (i.e., noted the element located at the output of 2nd multiplier as shown in Fig. 1; see page 1440);

e) computing a raw channel estimation value based on the data signal delayed in a predetermined time (i.e., noted the 3rd multiplier located at the decision block unit as shown in Fig. 1 as shown in Fig. 1; see page 1440); and

f) computing the final channel estimation value of channel variation using a non-linear filter based on the tentative estimation value of channel variation and the raw channel estimation

value (i.e., noted the filter element located between the 3rd and 4th multiplier as shown in Fig. 1; see 1440).

Regarding claim 5, Park et al discloses wherein the non-linear filter includes a plurality of taps for computing the final estimation value of channel variation by combining output signals from the taps, wherein the non-linear filter is formed by one tap for providing a weight to the tentative estimation value of channel variation and other taps for providing a weight to the raw channel estimation value (i.e., noted the plurality of taps as shown in Fig. 1 including a summing circuit for combining output signals and respective weight values are also provided to the plurality of multiplier provided within the non-linear filter as shown in Fig. 1 and page 1440; also see equation “9”).

Regarding claim 6, Park et al discloses wherein the weight is an inverse of the number of taps in the non-linear filter (i.e., see Fig. 1, page 1440 and Equation 9).

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Following references are related to the present claimed invention:

US 6,192,040

US 6,947,475

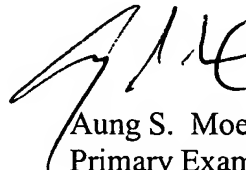
US 2003/0108135

Art Unit: 2685

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aung S. Moe whose telephone number is 571-272-7314. The examiner can normally be reached on Flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F. Urban can be reached on 571-272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Aung S. Moe
Primary Examiner
Art Unit 2685

A. Moe
March 4, 2006